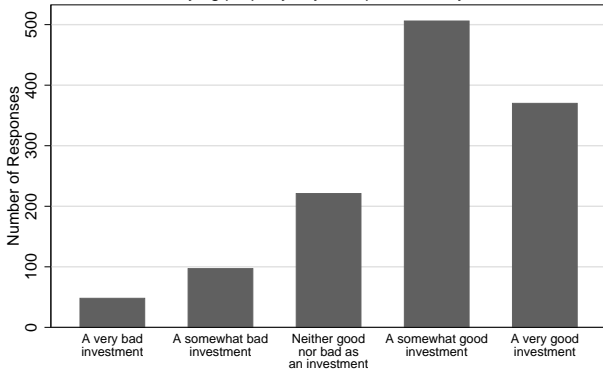## Social Networks and Housing Markets

Johannes Stroebel, New York University

Motivation

- Mounting evidence that people disagree about whether buying a house is a good investment

If someone had a large sum of money that they wanted to invest, would you say that relative to other possible financial investments, buying property in your zip code today is:

- What are the drivers of this disagreement?

Motivation

- Growing sense that social dynamics might affect house prices:

    - Shiller (2008): *"People were excessively optimistic about housing investments; this optimism was part of a social epidemic."*

    - Little systematic empirical evidence for underlying mechanism.

Motivation

- Growing sense that social dynamics might affect house prices:

  - Shiller (2008): *"People were excessively optimistic about housing investments; this optimism was part of a social epidemic."*

  - Little systematic empirical evidence for underlying mechanism.

- **Recent Research:** Bailey, Cao, Kuchler and Stroebel (JPE, 2018):

  1. Individuals discuss property investments with friends, and adjust their expectations based on house price experiences within social network.

  2. By influencing expectations, social interactions have a large effect on individual-level housing investment decisions:
     - Extensive margin
     - Intensive margin
     - Willingness to pay

Social Network Data from Facebook

- Facebook largest global and U.S. online social network
  - $\sim 60\%$ of U.S. adults regularly use Facebook.

- Observe anonymized snapshot of *social graph* of friendship links.
  - Average user in sample: 420 friendship links
  - >90% have met more than once in real life.

- Demographics, including county-level location.

Empirical Strategy and Data

Friends' House Price Experiences → **Social Interactions** → **Beliefs about Local Housing Market Investments**

Empirical Strategy and Data

Friends' House Price Experiences

Social Interactions →

Beliefs about Local Housing Market Investments

Facebook Social Graph
+ House Price Movements
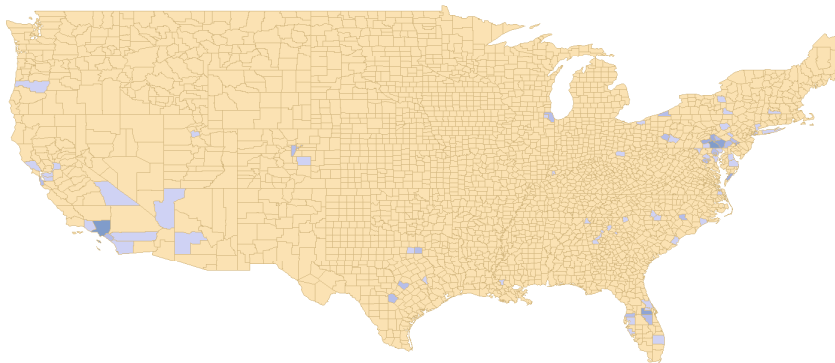in Friends' Location

Survey on Facebook,
1,242 Responses

Friends' House Price Experiences

$$FriendHPExp_{i,t,t-24m} = \sum_c ShareFriends_{i,c} \times \Delta HP_{c,t,t-24m}$$

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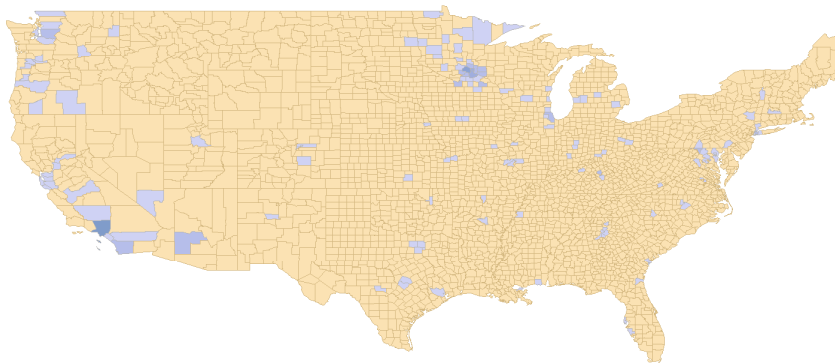
- Example: LA resident I

Friends' House Price Experiences

$$FriendHPExp_{i,t,t-24m} = \sum_{c} ShareFriends_{i,c} \times \Delta HP_{c,t,t-24m}$$
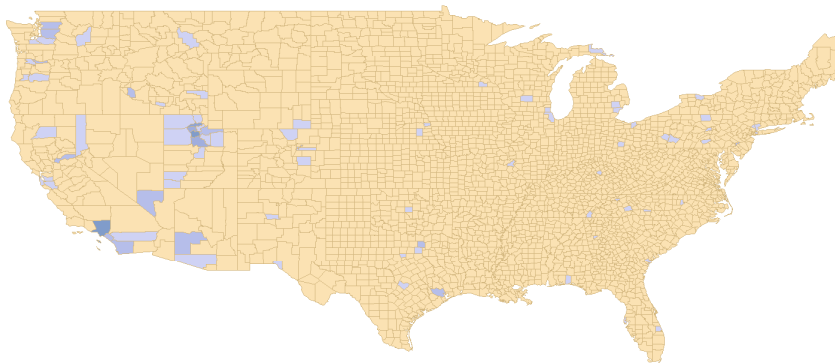
- Example: LA resident II
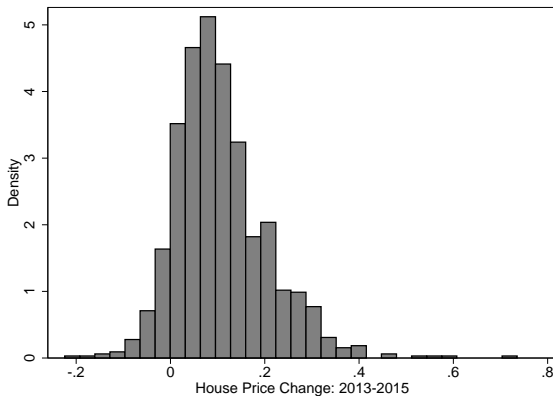
Friends' House Price Experiences

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- Example: LA resident III

Friends' House Price Experiences

$$FriendHPExp_{i,t,t-24m} = \sum_{c} ShareFriends_{i,c} \times \Delta HP_{c,t,t-24m}$$

Housing Survey

- November 2015: Target FB users through newsfeed; 1,242 responses
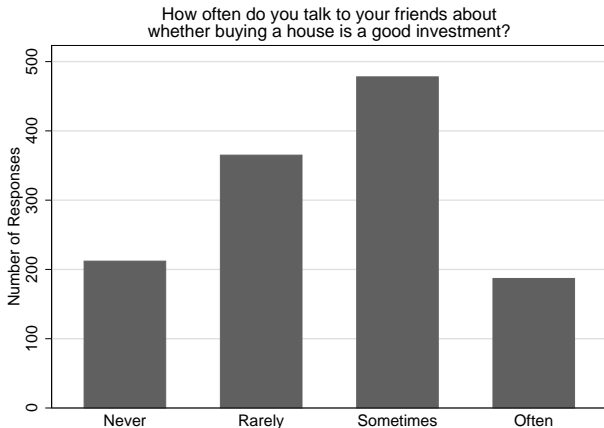- Focus on a few LA zip codes; Fairly representative demographics

Housing Survey

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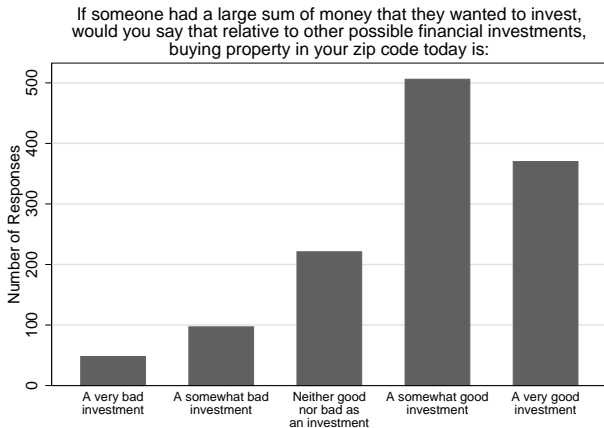How often do you talk to your friends about
whether buying a house is a good investment?

- Housing investment regularly topic of discussion within social network.

Housing Survey

- November 2015: Target FB users through newsfeed; 1,242 responses

- Focus on a few LA zip codes; Fairly representative demographics

If someone had a large sum of money that they wanted to invest, would you say that relative to other possible financial investments, buying property in your zip code today is:

- Substantial dispersion in beliefs within the same housing market.

Housing Survey

$$SurveyExpectations_{i,t} = \alpha + \beta FriendHPExp_{i,t,t-24m} + \gamma \mathbf{X}_{i,t} + \epsilon_{i,t}$$

Housing Survey

$$SurveyExpectations_{i,t} = \alpha + \beta FriendHPExp_{i,t,t-24m} + \gamma \mathbf{X}_{i,t} + \epsilon_{i,t}$$

	(1)	(2)	(3)
	IV	IV	IV
All Friend Appreciation 2013-15 (%)	0.040**	0.036*	
	(0.017)	(0.019)	
Friend Appreciation 2013-15 (%) x Talk with Friend about Housing Investment			
Never			-0.050
			(0.038)
Rarely			0.001
			(0.028)
Sometimes			0.086***
			(0.027)
Often			0.096**
			(0.049)
Demographic Controls	Y	Y	Y
Zip Code Fixed Effects	Y	Y	Y
Sample		LA in 2012	
N	1,242	1,110	1,242

- Larger effect of friends' experiences when talking more about housing.

Friend Experiences and Housing Market Expectations

**Geographically-Distant Friends'
House Price Experiences**

Social Interactions

**Beliefs about Local Housing
Market Investments**

Facebook Social Graph
+ House Price Movements
in Friends' Location

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↓

Individual Housing Market Investments

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Individual Housing Market
Investments

Friend Experiences and Housing Market Expectations

Geographically-Distant Friends' House Price Experiences

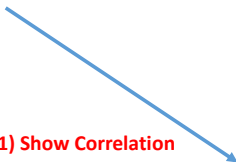> Facebook Social Graph + House Price Movements in Friends' Location

Social Interactions

Beliefs about Local Housing Market Investments

1) Show Correlation

2) Argue Effect Through No Other Channel Except Expectations

Individual Housing Market Investments

> LA county deeds data, 100,000s of observations

Effects on Housing Market Behavior

Having friends who experience a 5 percentage point higher house price experience over the previous two years:

- Increase probability that a renter buys a house over next two years by 3 percentage points
  - Relative to baseline probability of 18 percentage points
  - About half the effect size of having a kid

- Increases square footage by 1.6%

- Conditional on the type of house you buy, increases price paid by 2.3%

Rational Behavior?

- Why are individuals influenced by the house price experiences of their friends?

  - Social learning? FOMO?

- Hard to rule out fully rational behavior, but three thoughts:

  1 Effect is (weakly) declining in education levels.

  2 Effect is independent of the true informativeness of network house price experience for future LA house prices.

  3 House prices across the country available for free and in real time.

Summary of Individual-Level Findings

What have we learned?

1. Individuals discuss property investments with friends, and adjust their expectations based on house price experiences within social network.

2. By influencing expectations, social interactions have a large effect on individual-level housing investment decisions:

   - Extensive & intensive margin, willingness to pay

Summary of Individual-Level Findings

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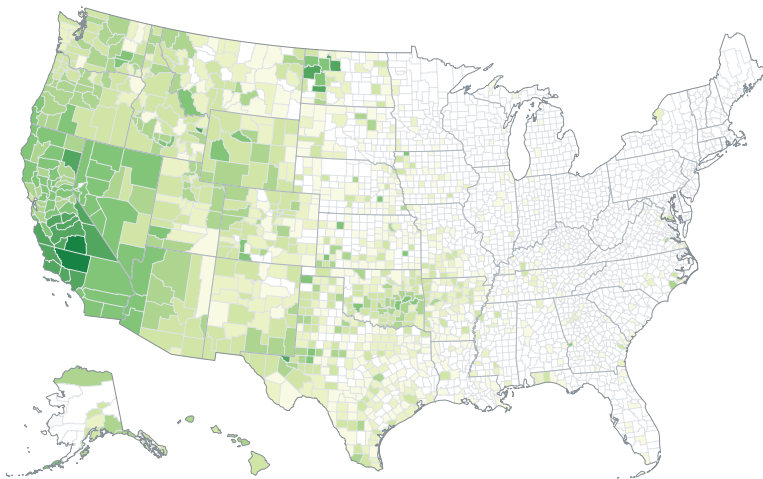**Does this affect county-level house prices, or does this average out across people within counties?**

- Move from individual level to county level

- Need to measure county-level social connectedness

- Introducing the "Social Connectedness Index"
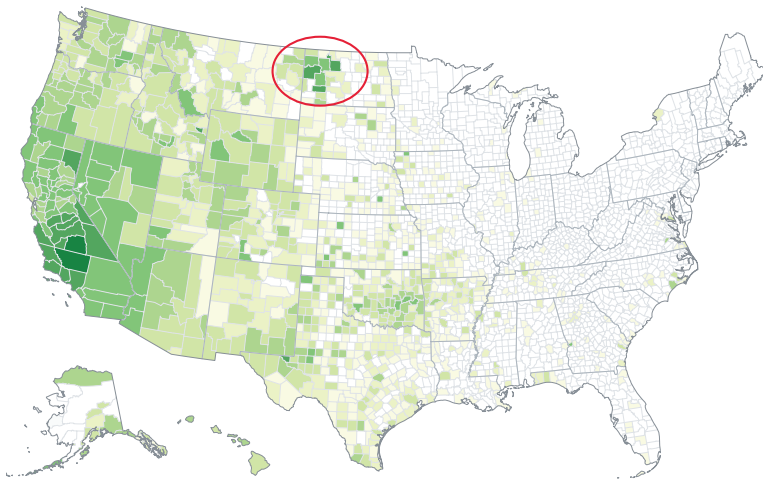
San Francisco County, CA

Kern County, CA (Bakersfield)
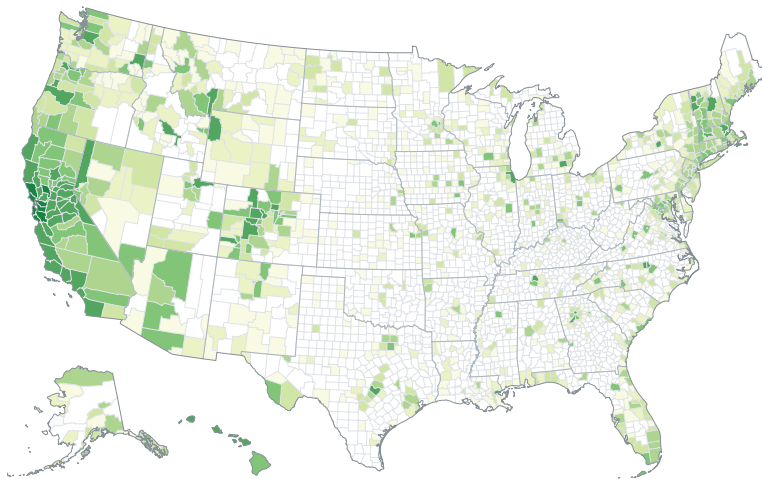
Data Source: Bailey, Cao, Kuchler, Stroebel, and Wong (2018, JEP)
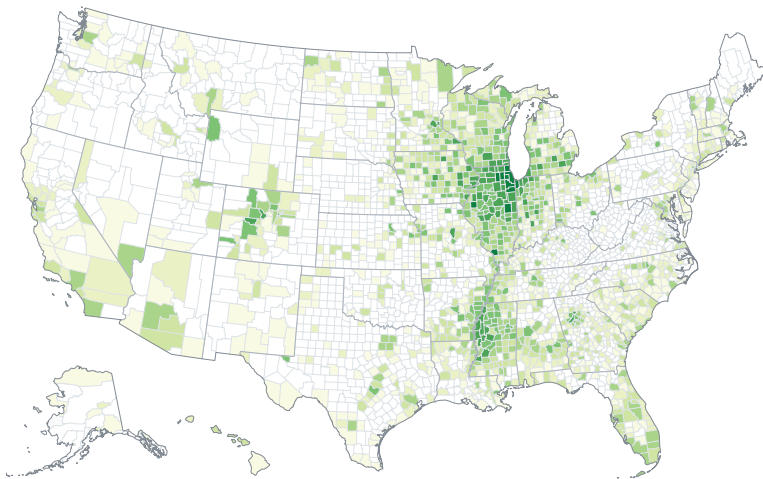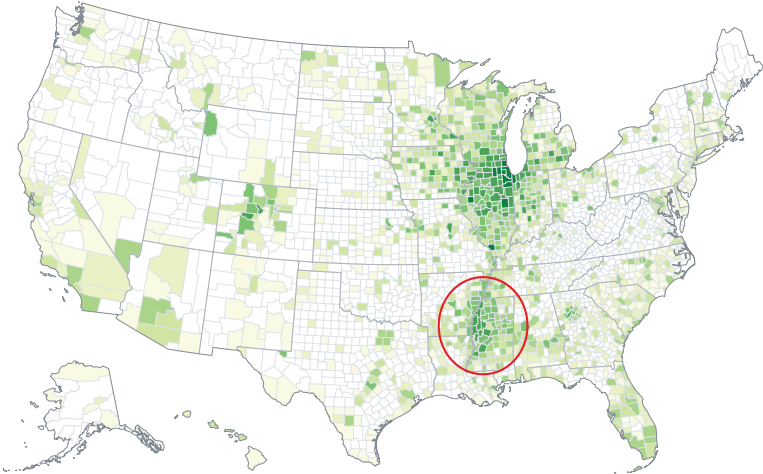
Kern County, CA (Bakersfield)

Kern County, CA (Bakersfield)

Cook County, IL (Chicago)

Cook County, IL (Chicago)

Summary of County-Level Findings

- Use this data to measure county-level social connectedness

- Show that when house prices in socially-connected counties have risen, this predicts future house price increases in own county

- Data available: Send 1-page research proposal to `sci_data@fb.com`.

High-Level Conclusions

- People's beliefs about whether buying a house is a good investment are driven by the house price experiences of their friends

- Through this channel, social interactions have a large effect on home purchasing behavior and even aggregate house prices